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*** ANNOUNCEMENTS ***

*** FREE FILE OF THE MONTH: EMBASE (Files 72 ,73)

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NEW FILE

***File 651, TRADEMARKSCAN(R) - China. See HELP NEWS 651 for details.

RESUMED UPDATING

***File 523, D&B European Financial Records

RELOADS COMPLETED

***Files 154&155, MEDLINE(R)

***File 227, TRADEMARKSCAN(R) - Community Trademarks

FILES RENAMED

***File 321, PLASPEC now known as Plastic Properties Database

FILES REMOVED

***File 388,PEDS: Defense Program Summaries

***File 588,DMS-FI Contract Awards

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* * *

SYSTEM:HOME

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Menu System II: D2 version 1.8.0 term=ASCII

*** DIALOG HOMEBASE(SM) Main Menu ***

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2. Database, Rates, & Command Descriptions
3. Help in Choosing Databases for Your Topic
4. Customer Services (telephone assistance, training, seminars, etc.)
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Connections:

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*** DIALOG HOMEBASE(SM) Main Menu ***

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1. Announcements (new files, reloads, etc.)
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? b biosci

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03mar09 13:05:15 User276653 Session D155.1
$0.00 0.277 DialUnits FileHomeBase
$0.00 Estimated cost FileHomeBase
$0.03 TELNET
$0.03 Estimated cost this search
$0.03 Estimated total session cost 0.277 DialUnits
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SYSTEM:OS - DIALOG OneSearch

File 5:Biosis Previews(R) 1926-2009/Feb W4

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File 34:SciSearch(R) Cited Ref Sci 1990-2009/Feb W4
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File 110:WasteInfo 1974-2002/Jul
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***File 110: This file is closed (no updates)**

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(c) 2009 NewsRx

File 136:BioEngineering Abstracts 1966-2007/Jan
(c) 2007 CSA.

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File 154:MEDLINE(R) 1990-2009/Feb 27
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File 155:MEDLINE(R) 1950-2009/Feb 26

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Set	Items	Description
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? s forisome?		
	S1 121	FORISOME?
? s s1 and trypsin		
	121 S1	
	321303	TRYPSIN
	S2 0	S1 AND TRYPSIN
? s s1 and fabaceae		
	121 S1	
	370315	FABACEAE
	S3 32	S1 AND FABACEAE
? s s1 and vicia(3n)faba		
	121 S1	
	63637	VICIA
	50081	FABA
	45697	VICIA(3N)FABA
	S4 66	S1 AND VICIA(3N)FABA
? s s4 and kDa		
	66 S4	
	916278	KDA
	S5 0	S4 AND KDA
? s s4 and weight		
	66 S4	
	4439913	WEIGHT
	S6 0	S4 AND WEIGHT
? s s4 and contract?		
	66 S4	
	1532044	CONTRACT?
	S7 55	S4 AND CONTRACT?
? s s7 and crystal?		
	55 S7	
	3045150	CRYSTAL?

S8 5 S7 AND CRYSTAL?
? t s8/9,k/1-5

8/9,K/1 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
(c) 2009 The Thomson Corp. All rts. reserv.

18527783 Genuine Article#: 373NM Number of References: 43
Title: GFP Tagging of Sieve Element Occlusion (SEO) Proteins Results in Green Fluorescent Forisomes
Author(s): Pelissier HC; Peters WS; Collier R; van Bel AJE; Knoblauch M (REPRINT)
Corporate Source: Washington State Univ,Sch Biol Sci,Pullman//WA/99164 (REPRINT); Washington State Univ,Sch Biol Sci,Pullman//WA/99164; Indiana Univ Purdue Univ,Dept Biol,Ft Wayne//IN/46805; Univ Giessen,Inst Allgemeine Bot,D-35390 Giessen//Germany/
Journal: PLANT AND CELL PHYSIOLOGY, 2008, V49, N11 (NOV), P1699-1710
ISSN: 0032-0781 Publication date: 20081100
Publisher: OXFORD UNIV PRESS, GREAT CLARENDON ST, OXFORD OX2 6DP, ENGLAND
Language: English Document Type: ARTICLE
Geographic Location: USA; Germany
Journal Subject Category: PLANT SCIENCES; CELL BIOLOGY
Abstract: **Forisomes** are Ca-2-driven, ATP-independent **contractile** protein bodies that reversibly occlude sieve elements in faboid legumes. They apparently consist of at least three proteins; potential candidates have been described previously as FOR proteins. We isolated three genes from *Medicago truncatula* that correspond to the putative **forisome** proteins and expressed their green fluorescent protein (GFP) fusion products in *Vicia faba* and *Glycine max* using the composite plant methodology. In both species, expression of any of the constructs resulted in homogenously fluorescent **forisomes** that formed sieve tube plugs upon stimulation; no GFP fluorescence occurred elsewhere. Isolated fluorescent **forisomes** reacted to Ca-2 and chelators by **contraction** and expansion, respectively, and did not lose fluorescence in the process. Wild-type **forisomes** showed no affinity for free GFP in vitro. The three proteins shared numerous conserved motifs between themselves and with hypothetical proteins derived from the genomes of *M. truncatula*, *Vitis vinifera* and *Arabidopsis thaliana*. However, they showed neither significant similarities to proteins of known function nor canonical metal-binding motifs. We conclude that FOR-like proteins are components of **forisomes** that are encoded by a well-defined gene family with relatives in taxa that lack **forisomes**. Since the mnemonic FOR is already registered and in use for unrelated genes, we suggest the acronym SEO (sieve element occlusion) for this family. The absence of binding sites for divalent cations suggests that the Ca-2 binding responsible for **forisome contraction** is achieved either by as yet unidentified additional proteins, or by SEO proteins through a novel, uncharacterized mechanism.

Identifiers--KeyWord Plus(R): **CRYSTALLINE** P-PROTEIN; CALCIUM-BINDING; PHLOEM; LEGUMES; MODEL; **CONTRACTILITY**; PREDICTION; TRANSPORT; BIOLOGY; PLANTS

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Title: GFP Tagging of Sieve Element Occlusion (SEO) Proteins Results in Green Fluorescent Forisomes

Abstract: Forisomes are Ca²⁺-driven, ATP-independent contractile protein bodies that reversibly occlude sieve elements in faboid legumes. They apparently consist of at...

...as FOR proteins. We isolated three genes from *Medicago truncatula* that correspond to the putative forisome proteins and expressed their green fluorescent protein (GFP) fusion products in *Vicia faba* and *Glycine max* using the composite plant methodology. In both species, expression of any of the constructs resulted in homogenously fluorescent forisomes that formed sieve tube plugs upon stimulation; no GFP fluorescence occurred elsewhere. Isolated fluorescent forisomes reacted to Ca²⁺ and chelators by contraction and expansion, respectively, and did not lose fluorescence in the process. Wild-type forisomes showed no affinity for free GFP in vitro. The three proteins shared numerous conserved motifs...

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...Identifiers-- **CRYSTALLINE** P-PROTEIN; CALCIUM-BINDING; PHLOEM; LEGUMES; MODEL; **CONTRACTILITY**; PREDICTION; TRANSPORT; BIOLOGY; PLANTS

8/9,K/2 (Item 2 from file: 34)
 DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
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16373899 Genuine Article#: 15800 Number of References: 40
Title: Reversible birefringence suggests a role for molecular self-assembly in forisome contractility
 Author(s): Peters WS (REPRINT) ; Schnetter R; Knoblauch M
 Corporate Source: Indiana Univ Purdue Univ,Dept Biol,2101 E Coliseum Blvd/Ft Wayne//IN/46805 (REPRINT); Indiana Univ Purdue Univ,Dept Biol,Ft Wayne//IN/46805; Univ Glessen,Inst Allgemeine Bot,D-35390 Glessen//Germany//; Washington State Univ,Sch Biol Sci,Pullman//WA/99164
 Journal: FUNCTIONAL PLANT BIOLOGY, 2007, V34, N4, P302-306
 ISSN: 1445-4408 Publication date: 20070000
 Publisher: CSIRO PUBLISHING, 150 OXFORD ST, PO BOX 1139, COLLINGWOOD, VICTORIA 3066, AUSTRALIA
 Language: English Document Type: ARTICLE
 Geographic Location: USA; Germany
 Journal Subject Category: PLANT SCIENCES
Abstract: Forisomes are contractile protein bodies that control the effective diameter of the sieve elements of the faboid legumes by reversible, Ca2+-driven changes of shape. Forisomes consist of fibrils; we inferred from available electron-microscopical data (which necessarily provide images of fixed, non-functional forisomes) that a reversible assembly of ordered fibrillar arrays might be involved in the contractile mechanism. Here we examined functional forisomes isolated from Vicia faba L. by differential interference contrast microscopy and polarisation microscopy. We found them birefringent in the longitudinally expanded but not in the contracted state, showing 'parallel extinction' with the direction of vibration of the slow ray coinciding with their long axis (positive birefringence). These findings met predictions derived from the theory of form birefringence in rodlet composite bodies, and supported the idea of molecular self-assembly as a factor in forisome contractility.
 Descriptors--Author Keywords: calcium-dependent contractility ; phloem transport ; **Vicia faba**
 Identifiers--KeyWord Plus(R): BEAN PHASEOLUS-MULTIFLORUS; **CRYSTALLINE** P-PROTEIN; SIEVE ELEMENTS; FORM BIREFRINGENCE; PHLOEM; ULTRASTRUCTURE; TRANSLOCATION; INHIBITION; MICROSCOPY; ACTUATORS
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Title: Reversible birefringence suggests a role for molecular self-assembly in forisome contractility

Abstract: Forisomes are **contractile** protein bodies that control the effective diameter of the sieve elements of the faboid legumes by reversible, Ca²⁺-driven changes of shape. **Forisomes** consist of fibrils; we inferred from available electron-microscopical data (which necessarily provide images of fixed, non-functional **forisomes**) that a reversible assembly of ordered fibrillar arrays might be involved in the **contractile** mechanism. Here we examined functional **forisomes** isolated from **Vicia faba** L. by differential interference contrast microscopy and polarisation microscopy. We found them birefringent in the longitudinally expanded but not in the **contracted** state, showing 'parallel extinction' with the direction of vibration of the slow ray coinciding with...

...rodlet composite bodies, and supported the idea of molecular self-assembly as a factor in **forisome contractility**.
 ...Identifiers--BEAN PHASEOLUS-MULTIFLORUS; **CRYSTALLINE** P-PROTEIN; SIEVE ELEMENTS; FORM BIREFRINGENCE; PHLOEM; ULTRASTRUCTURE; TRANSLOCATION;

8/9,K/3 (Item 3 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
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15591813 Genuine Article#: 086TV Number of References: 31

Title: The geometry of the forisome -sieve element-sieve plate complex in the phloem of *Vicia faba* L. leaflets

Author(s): Peters WS (REPRINT) ; van Bel AJE; Knoblauch M

Corporate Source: Indiana Univ Purdue Univ, Dept Biol, 2101 E Coliseum

Bldg/Ft Wayne//IN/46805 (REPRINT); Indiana Univ Purdue Univ, Dept

Biol, Ft Wayne//IN/46805; Univ Giessen, Inst Allgemeine Bot, D-35390

Giessen//Germany/; Washington State Univ, Sch Biol Sci, Pullman//WA/99164

(petersw@ipfw.edu; knoblauch@wsu.edu)

Journal: JOURNAL OF EXPERIMENTAL BOTANY, 2006, V57, N12 (SEP), P3091-3098

ISSN: 0022-0957 Publication date: 20060900

Publisher: OXFORD UNIV PRESS, GREAT CLARENDON ST, OXFORD OX2 6DP, ENGLAND

Language: English Document Type: ARTICLE

Geographic Location: USA; Germany

Journal Subject Category: PLANT SCIENCES

Abstract: Forisomes are contractile protein bodies that appear to control flux rates in the phloem of faboid legumes by reversibly plugging the sieve tubes. Plugging is triggered by Ca²⁺ which induces an anisotropic deformation of **forisomes**, consisting of a longitudinal **contraction** and a radial expansion. By conventional light microscopy and confocal laser-scanning microscopy, the three-dimensional geometry of the **forisome** -sieve element-sieve plate complex in intact sieve tubes of leaflets of *Vicia faba* L. was reconstructed. **Forisomes** were mostly located close to sieve plates, and occasionally were observed drifting unrestrainedly along the sieve element, suggesting that they might be utilized as internal markers of flow direction. The diameter of **forisomes** in the resting state correlated with the diameter of their sieve elements, supporting the idea that radial expansion of **forisomes** is the geometric basis of reversible sieve tube plugging. Comparison of the present results regarding **forisome** geometry in situ with previously published data on **forisome** reactivity in vitro makes it questionable, however, whether **forisomes** are capable of completely sealing sieve tubes in *V. faba* leaves.

Descriptors--Author Keywords: Ca²⁺-dependent **contractility** ; **contractile** protein ; **forisome** ; phloem transport ; sieve element plugging ; sieve tube geometry ; *Vicia faba* L.

Identifiers--KeyWord Plus(R): BEAN PHASEOLUS-MULTIFLORUS; **CRYSTALLINE** P-PROTEIN; ULTRASTRUCTURE; TRANSLOCATION; INHIBITION; MICROSCOPY; VULGARIS; FEATURES; ROOTS; TUBES

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 WERGIN WP, 1970, V71, P365, PROTOPLASMA

Title: The geometry of the forisome -sieve element-sieve plate complex in the phloem of Vicia faba L. leaflets

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...Identifiers--BEAN PHASEOLUS-MULTIFLORUS; **CRYSTALLINE** P-PROTEIN; ULTRASTRUCTURE; TRANSLOCATION; INHIBITION; MICROSCOPY; VULGARIS; FEATURES; ROOTS; TUBES

8/9,K/4 (Item 1 from file: 154)
 DIALOG(R)File 154:MEDLINE(R)
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15517406 PMID: 12942070

ATP-independent contractile proteins from plants.
 Knoblauch Michael; Noll Gundula A; Muller Torsten; Prufer Dirk;
 Schneider-Huther Ingrid; Scharner Dorte; Van Bel Aart J E; Peters Winfried

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Publishing Model Print-Electronic; Comment in Nat Mater. 2003
Sep;2(9) 573-4; Comment in PMID 12951596; Erratum in Nat Mater. 2005
Apr;4(4):353

Document type: Evaluation Studies; Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

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Emerging technologies are creating increasing interest in smart materials that may serve as actuators in micro- and nanodevices. Mechanically active polymers currently studied include a variety of materials. ATP-driven motor proteins, the actuators of living cells, possess promising characteristics, but their dependence on strictly defined chemical environments can be disadvantageous. Natural proteins that deform reversibly by entropic mechanisms might serve as models for artificial **contractile** polypeptides with useful functionality, but they are rare. Protein bodies from sieve elements of higher plants provide a novel example. sieve elements form microfluidics systems for pressure-driven transport of photo-assimilates throughout the plant. Unique protein bodies in the sieve elements of legumes act as cellular stopcocks, by undergoing a Ca2+-dependent conformational switch in which they plug the sieve element. In living cells, this reaction is probably controlled by Ca2+-transporters in the cell membrane. Here we report the rapid, reversible, anisotropic and ATP-independent **contractility** in these protein bodies in vitro. Considering the unique biological function of the legume ' **crystalloid** ' protein bodies and their **contractile** properties, we suggest to give them the distinctive name **forisome** ('gate-body'; from the Latin foris, the wing of a gate).

Descriptors: *Molecular Motor Proteins--chemistry--CH; *Nanotechnology
--methods--MT; *Plant Proteins--chemistry--CH; *Plant Proteins--radiation
effects--RE; * **Vicia faba** --chemistry--CH; Adenosine Triphosphate
--chemistry--CH; Biomimetic Materials--chemistry--CH; Biomimetics--methods
--MT; Elasticity; Electromagnetic Fields; Materials Testing--methods--MT;
Motion; Protein Conformation; Stress, Mechanical; **Vicia faba**
--metabolism--ME

CAS Registry No.: 0 (Molecular Motor Proteins); 0 (Plant Proteins);
56-65-5 (Adenosine Triphosphate)

Record Date Created: 20030902

Record Date Completed: 20031015

Date of Electronic Publication: 20030824

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